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(54) **Bleach compositions containing micro-organism encapsulated perfumes.**

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Description

The invention relates to perfumed bleach compositions wherein the perfume is present in encapsulated form. More particularly the invention relates to perfumed bleach compositions wherein the perfume is encapsulated in microorganism cells.

Bleaching compositions, such as bleach containing detergents, scouring products and the like are characterized by their strong oxidizing properties. The consumer nevertheless expects such products to have a pleasing odour and this has presented producers with the problem of finding perfumes which are able to withstand the oxidizing environment. This problem has heretofore been solved by carefully selecting sufficiently stable perfume components, such as described in US-A-4,719,042 and JP-B-54/025514. However, this severely restricts the perfumer in his choice of components for his perfume. Thus there is a need for perfumed bleach compositions wherein the perfume is protected from deterioration by the oxidizing environment and yet is liberated when the product is used by the consumer. Since bleaching compositions may be either solids or aqueous liquids, the protective medium should not liberate the perfume simply by dissolution in water.

Bleach containing abrasive cleaning compositions comprising perfumes encapsulated in partially hardened gelatine are known from GB-A-1,367,622. Bleach containing laundry detergent compositions comprising perfumes in water-insoluble microcapsules are described in US-A-4,145,184. However, the preparation of such micro-capsules involves laborious procedures, especially coacervation encapsulation and is therefore not completely satisfactory.

Perfumed bleach compositions wherein the perfume is protected from the oxidizing environment have now been found comprising a bleaching agent and a perfume encapsulated in cells of micro-organisms. The micro-organism cells are chosen such that they remain intact in the oxidative medium but are disintegrated and release their contents when the consumer uses the product. Thus, for bleaching laundry detergents, cells are chosen which disintegrate due to the high temperature and the mixing action of the washing cycle. For scouring products cells are chosen which disintegrate due to the scouring action. Preferred cells are those of yeasts, more particularly the genus *Saccharomyces cerevisiae* and of filamentous fungi such as *Aspergillus niger*.

Perfumes may be encapsulated in microorganism cells according to methods known in the art such as described in US-A-4,001,480 and in EP-A-242,135. Thus treated micro-organism cells may contain up to 75% perfume and preferably should contain at least 15%, calculated on the total weight of the perfume containing cells. The amount of perfume containing cells (perfume encapsulate) to be added to a particular bleaching product depends on the perfume load in the cells and the amount of perfume one desires to add to the product. The perfume content of bleaching products usually lies in the range of 0.01 - 5% by weight, most commonly between 0.1 and 1% for laundry products and 0.01 and 1% for bleaching powders and liquids.

Bleaching products according to the invention generally contain oxidising agents commonly used in cleaning and detergent products. Such agents include:

- active chlorine generating systems e.g. sodium or calcium hypochlorite, sodium or potassium dichloroisocyanurate, trichlorocyanuric acid and chlorinated trisodium phosphate, commonly used in bleaching liquids and powders at levels of up to 10% available chlorine;
- hydrogen peroxide generating systems e.g. sodium percarbonate or perborate and their various hydrated forms (with or without precursors such as TAED) commonly used in laundry products at levels of up to 50% w/w;
- Peracid systems e.g. peroxy-monosulfuric acid, diperoxy-dodecanedioic acid, m-chloroperbenzoic acid, monoperphthalic acid, diperisophthalic acid, and salts thereof, commonly used in laundry products at levels of up to 50% w/w.

Perfumed bleach compositions according to this invention include: laundry powders and liquids, powdered and liquid bleaches, dishwashing powders and liquids and scouring products. Such products conventionally contain some surface active agent. Thus, laundry products may contain anionic, non-ionic, ampholytic, zwitterionic or cationic surfactants or mixtures thereof at levels of between 5 and 50% w/w. Liquid bleaches may contain amine oxides, alkylphenoxybenzene disulphonates and/or linear alkylbenzene sulphonates at levels of between 0.05 and 5% w/w. Dishwashing powders may contain ethoxylated alcohols at levels of between 0.1 and 5% w/w. Dishwashing liquids may contain amine oxides, nonionics, alkylether sulphates, alkane sulphonates and alkylbenzene sulphonates at levels of between 0.1 and 50% w/w. Bleach containing scouring powders may contain linear alkylbenzene sulphonates at levels of between 0.1 and 50% w/w.

The bleach compositions may be prepared according to procedures usual in the art and the encapsulated perfume added at any suitable stage. If at some stage during the preparation of the bleach

composition the application of heat or vigorous mixing is involved, the encapsulated perfume is preferably added after that stage.

The invention is illustrated by the following examples, but not in any way limited thereto.

5 EXAMPLE 1

Preparation of perfume encapsulate

10 Dried baker's yeast (10g "Fermipan" ex Gist Brocades), water (40g) and a perfume (10g) were mixed together in a flask and maintained at a temperature of 40 °C for 4 hours whilst stirring at 250 rpm using a magnetic stirrer. The mixture was then centrifuged at 2000 rpm for 20 minutes. The bottom layer was obtained by decantation, and washed with a small quantity of distilled water in a Buchner funnel. Excess water was removed by suction and a thick slurry was obtained which was suitable for addition to aqueous liquid bleach compositions. The slurry could be dried by prolonged suction (1 hour) followed by drying in a vacuum desiccator. The perfume content of the dried encapsulate (quantified by extraction of a sample with methanol followed by gc analysis) was found to be about 46% by weight.

20 Alternatively, the washed slurry was pumped to a spray-drier (Lab-Plant SD-03, downward spray nozzle 0.5 mm), where it was spray dried at an inlet temperature of 175 -180 °C and an outlet temperature of 100-110 °C. The perfume content of the dried encapsulate (quantified as specified above) was found to be about 42% by weight. Perfume encapsulates prepared according to this procedure were used to prepare solid perfumed bleaching compositions.

EXAMPLE 2

25 A perfumed thickened bleach was prepared according to the following formula:

	% by weight
Sodium hypochlorite solution ¹	55.00
Empigen OB® ²	5.00
Potassium chromate	0.02
Elfan OS 46® ³	1.0
Sodium hydroxide	0.7
Perfume encapsulate slurry according to EXAMPLE 1	0.3
35 Water	37.98

¹ containing 15% available chlorine and 0.6% sodium hydroxide

² Lauryl/myristyl amine oxide, 30% active

³ Sodium alpha-olefin sulphonate detergent, 38% active

40 The Elfan OS 46® and half of the water were mixed. The sodium hydroxide was dissolved in the remaining water and the Empigen OB® was added, followed by the sodium hypochlorite solution. Thereafter the potassium chromate was added and the mixture was stirred well. Then the Elfan OS 46® solution was added with stirring, followed by the perfume encapsulate.

45 EXAMPLE 3

A bleach containing scouring powder was prepared according to the following formula, by dry mixing of the components:

	% by weight
Sodium carbonate	1.0
Calcite	97.6
55 Trichlorocyanuric acid	1.0
Dobanol 25-7®	0.2
Perfume encapsulate according to EXAMPLE 1	0.2

EXAMPLE 4

A dishwashing liquid was prepared according to the following formula:

	% by weight
Thermphos NW® ¹	30.0
Sodium silicate solution 48/50 • Bé (Mean weight ratio SiO ₂ : Na ₂ O = 2.0-2.1)	30.0
Sodium carbonate	2.5
Sodium hypochlorite solution (15% available Cl)	6.6
Gelwhite H® ²	2.0
Purified water	28.3
Aromox DMMCD-W® ³	0.4
Perfume encapsulate slurry according to EXAMPLE 1	0.2

¹ Sodium tripolyphosphate marketed by Hoechst A.G.

² Montmorillonite clay marketed by ECC International, St Austell, Cornwall, England.

³ Dimethyl cocoamine oxide (29% active), marketed by Akzo Chemie BV.

The sodium carbonate was dissolved in the water and the sodium silicate and the sodium hypochlorite solutions were added. Then the Thermophos NW® was added whilst stirring vigorously. The Gelwhite® was added next with stirring and finally the mixture of Aromox and perfume encapsulate was added with gentle stirring.

EXAMPLE 5

A laundry powder was prepared according to the following formula, by dry mixing of the components:

	% by weight
Sodium tripolyphosphate	35.0
Sodium silicate	5.3
Sodium sulphate	35.0
Sodium dodecylbenzene sulphonate	7.0
C ₁₂ -C ₁₅ alcohol (7 EO) ethoxylate	3.0
Sodium perborate	6.3
TAED	5.7
CMC, enzymes, fluorescer	2.4
Perfume encapsulate according to EXAMPLE 1	0.3

Claims

1. Bleach composition comprising a bleaching agent and a perfume, wherein the perfume is encapsulated in microorganism cells.
2. Composition according to claim 1 wherein the micro-organism is a yeast.
3. Composition according to claim 2 wherein the yeast is a *Saccharomyces cerevisiae*.
4. Composition according to claim 1 wherein the micro-organism is a filamentous fungus
5. Composition according to any one of claims 1-4 also comprising a surface active agent.
6. Composition according to any one of claims 1-5 which is a liquid.
7. Composition according to any one of claims 1-5 which is a solid.

8. Composition according to any one of claims 1-7 wherein the bleaching agent is a compound which generates active chlorine.
9. Composition according to any one of claims 1-7 wherein the bleaching agent is a compound generating hydrogen peroxide.
10. Composition according to any one of claims 1-7 wherein the bleaching agent is a peracid or peracid salt.

10 Patentansprüche

1. Bleichmittelzusammensetzung, umfassend ein Bleichmittel und einen Riechstoff, bei der der Riechstoff in Mikroorganismenzellen eingekapselt ist.
2. Zusammensetzung nach Anspruch 1, bei der der Mikroorganismus eine Hefe ist.
3. Zusammensetzung nach Anspruch 2, bei der die Hefe eine *Saccharomyces cerevisiae* ist.
4. Zusammensetzung nach Anspruch 1, bei der der Mikroorganismus ein fadenförmiger Pilz ist.
5. Zusammensetzung nach einem der Ansprüche 1 bis 4, die noch ein oberflächenaktives Mittel umfaßt.
6. Zusammensetzung nach einem der Ansprüche 1 bis 5, die eine Flüssigkeit ist.
7. Zusammensetzung nach einem der Ansprüche 1 bis 6, die ein Feststoff ist.
8. Zusammensetzung nach einem der Ansprüche 1 bis 7, bei der das Bleichmittel eine aktives Chlor erzeugende Verbindung ist.
9. Zusammensetzung nach einem der Ansprüche 1 bis 7, bei der das Bleichmittel eine Wasserstoffperoxid erzeugende Verbindung ist.
10. Zusammensetzung nach einem der Ansprüche 1 bis 7, bei der das Bleichmittel eine Persäure oder ein Persäuresalz ist.

35 Revendications

1. Composition de blanchiment comprenant un agent de blanchiment et un parfum, dans laquelle le parfum est encapsulé dans des cellules de microorganismes.
2. Composition selon la Revendication 1, dans laquelle le microorganisme est une levure.
3. Composition selon la Revendication 2, dans laquelle la levure est une *Saccharomyces cerevisiae*.
4. Composition selon la Revendication 1, dans laquelle le microorganisme est un champignon filamenteux.
5. Composition selon l'une quelconque des Revendications 1 à 4, comprenant en outre un agent tensioactif.
6. Composition selon l'une quelconque des Revendications 1 à 5, qui est un liquide.
7. Composition selon l'une quelconque des Revendications 1 à 5, qui est un solide.
8. Composition selon l'une quelconque des Revendications 1 à 7, dans laquelle l'agent de blanchiment est un composé qui génère du chlore actif.
9. Composition selon l'une quelconque des Revendications 1 à 7, dans laquelle l'agent de blanchiment est un composé qui génère du peroxyde d'hydrogène.

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- 10.** Composition selon l'une quelconque des Revendications 1 à 7, dans laquelle l'agent de blanchiment est un peracide ou un sel de peracide.

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